REMARKS

Favorable reconsideration of this application is requested in view of the above amendments and the following remarks. Claims 1-18 and 20-22 remain pending. In claims 1 and 22, the nature of the angles has been clarified. The use of 2 degrees for the division between the small and large observation angles is supported for example at page 32, lines 5-9. The use of 5 to less than 90 degrees for the incidence angle is supported for example at page 19, line 25.

The Office Action included an objection to the title. Applicants respectfully contend that the present title succinctly informs one of ordinary skill of the general nature of the invention being claimed. The present title provides sufficient information for one of ordinary skill to determine whether the patent would be of interest without extraneous and potentially confusing details. Applicants note that the title does not need to reproduce the claim limitations to describe the general nature of the claimed invention. Applicants respectfully submit that the title suggested in the Office Action is overly long and cumbersome; the title's role in informing one of ordinary skill of the general nature of the invention in fact would be hampered by the length and detail. Therefore, Applicants request that the objection to the title be withdrawn.

Claims 1-18 and 20-22 were rejected as unpatentable over Bailey in view of Hedblom. Applicants respectfully traverse the rejection. For purposes of this response only, the discussion will focus on independent claim 1. The issues raised in favor of claim 1 apply equally to independent claim 22. Applicants are not conceding that claim 22 does not support additional arguments.

Applicants respectfully contend that the rejection relies on an erroneous interpretation of the references. The rejection interprets Bailey as teaching the first glass sphere group that provides reflective performance at a small observation angle and up to a large incidence angle and a second glass sphere group that provides reflective performance at a larger observation angle and up to a large incidence angle. Applicants respectfully disagree, and note that the express teachings of Bailey contradict this. In making Bailey's product, all of the spheres are embedded in the material that eventually forms the surface layer (element 10a in the figures) to a depth less than half the average diameter of the spheres and with the extreme edges of the non-embedded portions aligned in a common plane (col. 2, lines 16-20 and col. 4, lines 52-57). A spacing layer, which can be considered to correspond to the focusing layer of claim 1 (element

19c) then is applied to the surface with the protruding spheres. As seen at col. 2, lines 42-62, the purpose of the reference is to make the spacing layer uniform. Therefore, there is no reasonable basis to assume that Bailey includes the second sphere group required by claim 1, which provides reflective performance at the larger observation angle and up to a large incidence angle, particularly since the focusing layer is required to be thinner at the glass spheres than a focus formation position for the glass spheres while Bailey has a focusing layer of uniform thickness.

The rejection's reliance on Fig. 7's curve A in Bailey as showing the presence of the second group of spheres that provides reflective performance at a larger observation angle and up to a large incidence angle is erroneous. Page 4, lines 10-15 of the Office Action seem to suggest that Fig. 7's curve A illustrates the presence of a first sphere group with reflective performance at a small observation angle of 0 to 20 degrees, and a second group that provides reflective performance at a larger observation angle from 20 to 50 degrees. However, each of the four curves in Fig. 7 shows the change in reflectivity with change in the angle of incidence (col. 4, lines 10-13, col. 6, lines 6-13 and col. 10, lines 34-49) with an observation angle ("divergence angle" is the term used by Bailey) that is constant (0.2 degrees according to col. 6, line 8 of the reference). Therefore, curve A merely shows that the particular product tested showed different reflectivity between an angle of incidence of 0 to 20 degrees and one of 20 to 50 degrees. Neither curve A nor any other aspect of Fig. 7 of Bailey demonstrates the presence of a second group of spheres that provides reflective performance at a larger observation angle and up to a large incidence angle.

With respect to the paragraph bridging pages 9-10 of the Office Action, Applicants maintain that Bailey cannot be interpreted as suggesting the presence of the two sphere groups required by claim 1 in view of the reference's emphasis on the uniform thickness of the spacing layer. In any event, this point now is moot in view of the clarification of the observation and incidence angles in claim 1.

Item 4 on page 10 of the Office Action contends that Bailey's Fig. 3 shows a different distance from the top of surface layer 10a to the large spheres and the small spheres. This may be true, but is irrelevant to the issue of providing a thinner focusing layer for some of the spheres. Element 19c is the focusing layer, not surface layer 10a, and the focusing layer 19c has a uniform thickness for all of the spheres. As discussed above, the uniform thickness in fact is one Bailey's specific objectives.

Therefore, the rejection relies on a misinterpretation of Bailey and should be withdrawn for this reason alone. However, the rejection's interpretation of Hedblom also is incorrect.

The rejection contends that Bailey and Hedblom are related as retro-reflector bead systems. While this may be true, Applicants respectfully contend that there are significant practical considerations and differences in underlying theory between various types of reflective systems that preclude the simple interchangeability of parts that the rejection relies on in combining the reference disclosure.

Bailey, like the invention of claim 1, is directed to an enclosed lens system, and in Bailey the spheres are encapsulated by the surface layer 10a and focusing layer 19c as discussed above. On the other hand, Hedblom clearly and unequivocally is directed to an exposed lens retroreflective sheet. See for example line 4 of the Abstract, col. 2, lines 62-64, and col. 4, lines 6-10. That is, in the enclosed lens system, a surface layer is present over the glass spheres, while in the exposed lens system, the glass spheres are exposed to the outside.

The significance of this is illustrated by the Hedblom reference itself. In an exposed lens system, the surface of the glass spheres will become wet when it rains, and this affects the reflection performance. Hedblom specifically is concerned with improving the reflection performance of the exposed lens system in wet conditions. See for example col. 1, lines 21-34, col. 2, lines 47-51 and 54-58, and col. 6, lines 39-44. In an enclosed lens system, the glass spheres are not exposed to the atmosphere. Even in wet conditions, it is the surface layer that becomes wet, not the glass spheres, and the reflective performance of the glass spheres is not affected by the wet conditions. Thus, the teachings of Hedblom on how to improve the performance of the exposed lens system product in wet conditions have no relevance to an enclosed lens system such as that of Bailey.

This is not contradicted by the teachings at col. 2, lines 65-67 of Hedblom that additional layers may be present, cited at page 5 of the Office Action as supporting the combination of references. This portion of the reference may indeed disclose that there may be multiple layers, but this is referring to the structure that supports the exposed glass spheres. Col. 2, lines 65-67 specifically refer to one or more "top layers". As discussed at col. 3, line 34 and seen in Fig. 2, Hedblom's the "top layer" (element 22 of the reference) in fact is the part of the product used to adhere the glass spheres, spacing layer and reflective layer to a roadway or the like. There is no

suggestion that additional layers can be provided on the exposed glass spheres and this portion of Hedblom does not suggest the encapsulation of the spheres.

The rejection also cites Col. 10, line 38-41 as teaching that glass spheres should be disposed at random locations in the thickness direction of the focusing layer. However, Col. 10, lines 38-41 in fact state that "skid-resistant particles are randomly sprinkled ..." (emphasis added). This portion of the reference manifestly has nothing whatsoever to do with the location of the glass spheres.

Pages 10-11 of the Office Action characterize these points as "numerous and extraneous subtleties" that thus can be dismissed in determining the suitability of the references for combination. While Applicants agree that there are numerous distinctions, the issues involved are far from "extraneous". Rather, these points implicate the basic essence, function and performance of the two classes of products, and are highly relevant to whether one of ordinary skill reasonably would consider combining the teachings of the references.

Moreover, even if Hedblom were to be considered applicable to Bailey, the invention of claims 1 and 22 would not be achieved by combining the teaching of the references when the teachings of Hedblom are considered properly as a whole. Hedblom teaches that to improve the optical performance in wet conditions, the spacing layer should be made thicker. See col. 6, lines 39-44. Thus, in the embodiment of Fig. 4 of Hedblom, the focus layer thickness appropriate for dry conditions is made thicker for some spheres in order to improve the reflective performance for those spheres in wet conditions. This thickening of the focus layer teaches directly away from the requirement of claim 1 that the focusing layer for the second glass sphere group is made thinner at the glass spheres than a focus formation position for the glass spheres.

Claim 2 is even further removed from the references. Claim 2 requires that the second sphere group comprise spheres spaced away from the surface layer. As discussed above, Bailey specifically and intentionally embeds all of his spheres in the surface layer. Even if the rejection were to be correct in asserting that the art of record would suggest the different sphere groups and thinner focus layer of claim 1, to disengage some of Bailey's spheres from the surface layer to meet the requirement of claim 2 would completely and improperly disregard the entire thrust of Bailey's teachings. Applicants are not conceding the relevance of the references to the features of the remaining dependent claims.

In view of the above, Applicants request reconsideration of the application in the form of a Notice of Allowance.

Respectfully submitted,

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